INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 1996	**Park:** Shenandoah NP
Principal Investigator: Richard Tollo	**Office Phone:** (202)994-6960 **Email:** rtollo@gwu.edu
Address: George Washington University Department of Earth and Environmental Sciences Washington, DC 20052 US	**Office Fax:** (202)994-0450

Additional investigators or key field assistants (first name, last name, office phone, office email):

No co-investigators

Permit#:
SHEN1996ARWP

Park-assigned Study Id. #:
unknown

Project Title:
Geologic Evolution Of Mesoproterozioc Basement, Blue Ridge Province, Shenandoah National Park, Virginia (N-133B)

Permit Start Date: Jan 01, 1998	**Permit Expiration Date** Jan 01, 1998
Study Start Date: Jan 01, 1996	**Study End Date** Jan 01, 1996

Study Status:
Completed

Activity Type:
Research

Subject/Discipline:
Geochemistry (inc. Minerals / Petrology)

Objectives:
The primary objective of this study is the determination of detailed geologic and geochronologic relationships characterizing Mesoproterozoic metamorphic basement units exposed in that portion of the Blue Ridge province located in Shenandoah National Park, Virginia. The project involves detailed field mapping and an integrated program of petrologic, geochemical and isotopic analyses designed to elucidate petrologic, geochemical, and temporal aspects of the Grenville orogeny.

Findings and Status:
Work completed to date includes: (1) detailed field mapping in two portions of the study area, (2) sample collection and initial processing, and (3) petrographic analysis of selected rock samples. Field mapping and petrographic investigation have confirmed the presence of at least three lithologic units exposed between Mary's Rock and Old Rag Mountain. These units include: (1) garnet-bearing chanockitic gneiss, (2) amphibole-bearing two-pyroxene charnockite, and (3) leucocratic charnockite. The discovery of such lithologically diverse units within a relatively small area underscores the geological complexity of the region and further indicates that much geologic evidence pertaining to the nature, style, and significance of the Grenville orogeny has been heretofore overlooked. Geochemical analyses of bulk rock samples and chemical analyses of mineral samples are planned for Spring 1997 and are intended to produce further evidence bearing on the nature of Grenville-age magmas and the temperature-pressure conditions at which basement formation occurred. Isotopic analyses of zircons and monazites from selected samples will be undertaken during Summer 1997 and will be used to determine ages of Grenville-related plutonism and metamorphism.

For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?
No

Funding provided this reporting year by NPS: 0	**Funding provided this reporting year by other sources:** 0

Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college	
Full name of college or university:	**Annual funding provided by NPS to university or college this reporting year:**
n/a	0